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WAR NEUROSES AFTER PSYCHOLOGICAL TRAUMA

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The argument falls under two heads: (1) That a psychoneurosis, or, more correctly, a mental or a combined mental and physical disturbance, may be produced by a sudden frightening experience, and that this neurosis may be of a type which ultimately presents no symptoms except those produced episodically by associative arousal by some reminder of the original traumatic experience. These episodic symptoms may, however, be disabling while they last. (2) A traumatic psychoneurosis, either in this special sense or with persistent and not mainly episodic symptoms, may depend on either (a) a disturbance nearer the physiological level, depending on properties common to all organisms; or (b) a disturbance mainly at the psychological level, depending on the particular type of personality, especially the ego-organization, whether anxious, hysterical, or what-not.

"Traumatic neurosis," in the sense of a mental or a combined mental and functional-physical disturbance of some kind following a psychological stimulus from without, usually implies two things: that the event impinges suddenly, and that the subsequent disturbance persists for some time. In a war the provocative stimulus is usually one of fear, less often one of horror, or both combined.

The present study was prompted by a doubt whether in the case of flying personnel we know all we should know about psychiatric disabilities after flying accidents and terrifying experiences in combat, and whether we may do less than justice from the medical aspect in some cases in which disciplinary problems arise. The individuals studied presented no history suggesting head injury, or at most a very transient impairment of consciousness after the accident.

Three main kinds of speculation have been invoked to help in the understanding of the traumatic neuroses: (a) hypotheses based on biological analogies, especially the comparison of stupor following fright with the immobility reactions of animals; (b) speculations based on neurophysiological considerations, mainly Pavlov's (1928) formulations; (c) psychopathological and especially psycho-analytic speculations.

The first does not help us much except perhaps with regard to such transient stupors as those described by Hubert (1941). They might be regarded from this standpoint as regressive phenomena. Rivers (1920), in the last war, extended this analogy of sham-death to partial reactions, such as the immobility of a hysterically paralysed limb.

Pavlov's (1928) physiology offers a more seductive kind of analogy. The observation that reminders of a shattering experience may still produce mental reactions is of course very old. For example, Sir John Fortescue mentions that a lady who had been in the siege of Lucknow, in which her husband had been killed, and who had since remarried, would still, years afterwards, turn pale and tremble at the very mention of the place. This phenomenon of the "conditioned reflex" in its various elaborations can be applied in an interesting way to a description of war neurosis in general in Pavlov's and, to a lesser extent, in Sherrington's terms. Thus Love (1942) speaks of fear as a reflex, and increasing susceptibility to fear as due to facilitation of this reflex. He also suggests that the pro-

longed inhibition of fear may itself lead to a neurosis, just as delayed inhibition leads to an experimental "neurosis" in Pavlov's dog. This has been extended by Symonds (1943) to sudden traumatic experiences, when the individual seems to have been unaware of fear at the time but develops psychoneurotic symptoms some time (perhaps a day or two) afterwards. Pavlov's (1928) observation that ultramaximal stimuli, instead of producing excitation, produce the paradoxical result of inhibition, might be invoked to explain the phenomenon of stupor resulting from terrifying experiences.

The psycho-analytic view as propounded originally by Freud (1922) appeared to be concerned primarily with accidents in which some sudden physical stimulus impinged on the body surface. He says: "I think one may venture, tentatively, to regard the ordinary traumatic neurosis as the result of an extensive rupture of the barrier against stimuli." In this way the old doctrine of shock would come into its own again, apparently in opposition to a later and more psychologically pretentious view, which ascribes aetiological significance not to the effect of the mechanical force but to the fright and the menace to life. He pictures the stimulus which has broken through the barrier as having to be "bound" by charges of energy drafted from elsewhere in the organism. What conditions fright is the failure of the "mechanism of apprehension" to make the proper preparation, including the overcharging of the system first receiving the stimulus. The dreams of patients suffering from traumatic neuroses are attempts at restoring control of the stimuli by developing apprehension, "the premission of which caused the traumatic neurosis." This suggests the paradox that the greater the apprehension the less the likelihood of developing a traumatic "neurosis." There may be some truth in this in that it appears, according to my observations, that anyone, no matter how stable he may be, may develop a traumatic neurosis in the sense of recapitulatory dreams and "conditioned" responses if the traumatic experience is terrifying enough, while individuals of more anxious temperament are more apt to develop increased apprehension and the ordinary symptoms of anxiety. Freud (1922), however, adds that the traumatic neuroses of war may arise more easily as the result of ego-conflict. Following this hypothesis, Kardiner (1941) believes that a psychic trauma may leave the ego handicapped or restricted in its adaptation to the external world.

I suggest that there is some truth in all these theories and that there are at least two types of psychoneurotic response to a terrifying stimulus—one depending more on the physiological properties common to the nervous systems of all individuals, and another depending on the psychological aspects of the personality. There is no "unnecessary dualism" here; it is simply that one type of response is at present describable more in physiological terms and the other in psychological. They can be regarded as occurring at different levels of personality-integration.

"Simple Traumatic Neurosis"

The central feature of the classical traumatic neurosis has been the recurrent dream which recapitulates the traumatic event. Freud (1922) made it the point of departure for his observations on the repetition-compulsion phenomena. It

would not invalidate his speculations on repetition-compulsion if this kind of dream were to be found to depend not on disturbance of the organization of the ego but on more primitive properties. It would not be the first time in the history of medicine that a correct conclusion had been reached from a mistaken premise.

This type of dream may be regarded instead as a perseverative phenomenon at the physiological level. It can occur in mature personalities and it gradually dies out, like the fading of any other memory. That such experiences can persist in an engrammatic fashion is suggested by an observation of Penfield and Ericson's (1941). An epileptic girl aged 17 had had a fright at the age of 4 when a man came up behind her; she ran from him across a meadow to rejoin her brothers. Afterwards she had nightmares in which the scene was re-acted. Some time later she began to have attacks in which she showed fright, screamed, and clung to people, and these were followed by a major seizure. During the fright she saw the same scene, and was filled with terror lest she be struck or smothered from behind. This hallucination could be exactly reproduced by electric stimulus of the middle temporal gyrus.

The recurrence of a dream of a traumatic experience could be attributed to a similar automatic activity of a neural engram at a time when, as in sleep or in epilepsy, the inhibitory effect of the cortical activities is in abeyance. The occurrence of dream-like experiences, depending on a release of the cortical control, has been noted by Lhermitte and Tournay (1927) and others in mesencephalic lesions.

In traumatic neuroses in stable individuals I would place alongside the recapitulatory dream at this lower physiological level a conditioned response to anything nearly recalling the original trauma. What presumably produces them both in the first place is the arousal of the fear apparatus of the organism. There is evidence that this is stimulated even in the absence of conscious fear. Anyone who has been through a sudden frightening experience knows that immediately the crisis is over a variety of bodily sensations, such as palpitation, tingling, tremor, etc., make themselves felt. These occur so immediately as not to be produced by rumination. They occur automatically in response to the perception of danger. The other kind of evidence for the arousal of automatic fear reactions is the observation that bodily disturbance can be produced by some reminder of the original trauma in the absence of conscious mental disturbance. For example: An R.A.F. pilot, walking in the country, was suddenly aware of palpitation and uneasiness. He could not understand this until he realized that a certain smell that he had just whiffed was associated in his mind with the smell of burning flesh in an accident in which he had been involved (Lees, personal communication). It is to be supposed, therefore, that the immediate stimulation of the emergency physiological processes may influence, by "stamping-in," the visual perceptions at the time, even in those cases in which the individual is not consciously afraid.

This last instance is an example of the other traumatic effect in Freud's discussion which is not taken account of, but which is more upsetting because more persistent than the recapitulatory dream—namely, the conditioned response to any reminder of the traumatic event. We are accustomed to think of "conditioned responses" in the Pavlovian experiments as being established only by repeated training; but it is a commonplace observation that they may be founded on a single experience, if it be intense enough. Horsley Gantt (1943) confirms that the same effect can be produced in an experimental animal. The phenomenon is not identical with the "startle" response to a loud noise; it is specific to associations with the original stimulus.

The following instance, I suggest, is typical of a "traumatic neurosis" or psychoneurosis produced in the way described.

An air gunner, aged 32, on the first occasion on which he flew in a rear turret (where one is entirely enclosed and separated from the rest of the crew) panicked and emerged from the turret into the body of the machine "blowing like a grampus"—as the others described it. He had been seized with panic at being shut in, but could not at first account for this. He was a well-built man of apparently stable temperament. His history, however, revealed that at the age of 15, just after he had started work in a large stores, he had an unusual and terrifying experience. His duty every Saturday afternoon was to place the books in the strong-room. On this

particular occasion the door of the strong-room locked behind him and he found himself inside, with no apparent prospect of release till the following Monday. He began to feel that the atmosphere was getting more and more suffocating, and he became more and more frightened, until at last he realized that if he smashed a small red electric bulb he could sound the alarm and bring attention to himself. After he had been confined for about two and a half hours the door was opened by a watchman and guard armed with carbines, who naturally thought a burglar was inside.

He slept badly for some time after this episode and had nightmares recapitulating the experience. These gradually ceased, and the only symptom he could recall in the ensuing years was some uneasiness in confined spaces; for example, in buying a car of his own he had always chosen a roadster, as he was uncomfortable in a sedan.

The episode in the air was evidently an attack of panic depending on a "conditioned" associative arousal of the old experience. His heavy breathing was presumably related to the original fear of suffocation.

The deduction that suggests itself is that a condition which is otherwise symptomless may be disabling in specific situations. The reaction is automatic and independent of motive. It is important to note that the reaction which was produced included not only visceral components but conscious fear, of disabling intensity, as part of the reactive traumatic pattern. The similarity to Penfield and Ericson's (1941) case is suggestive, although there the releasing factor was the epileptic process.

Injustice would be done in such a case if the man were returned as fit because he complained of no symptoms in the ordinary sense. Someone may object that it is impossible to be certain that he was not motivated by a desire to avoid flying. One could only reply that evidence for this was lacking.

There are parallel instances where it seems possible to exclude motive, conscious or unconscious. A merely anecdotal example is Fortescue's story, already recounted; but documented examples are available from war experience. A W.A.A.F. officer, aged 39, who had been bombed out, had recapitulatory nightmares and retched a good deal. Long after the 1940-1 air raids had ceased she would retch again if she saw a chimney-pot damaged or a slate dislodged. She found it impossible to attain voluntary control of this symptom.

It seems justifiable, therefore, to suggest that an automatic, unmotivated, conditioned responsiveness may be produced by any sudden terrifying experience, such as an aircraft crash. The following is an example:

Sgt. A., an air gunner with 200 hours' flying to his credit, of which 40 had been spent in night flying, complained of loss of confidence and fear of night flying; he said he never got the feeling by day. Nine months previously he had been in his first night flight of any duration. The aircraft crashed on landing; he was trapped in the back of the machine and had to wait for people to cut him out. He wondered whether there would be a fire, but does not remember feeling particularly scared at the time. He dreamed of the crash afterwards, but otherwise showed no symptoms on the ground. In the air, however, he found himself in a state of acute apprehension, which increased with each attempt to fly. There was no evidence of timidity or any special tendency to anxiety in his previous history.

The argument, so far, is as follows: (1) There is a specific response to terrifying experience, not dependent on psychological attributes, but occurring more nearly on a physiological level. (2) This response consists principally of a recurring nightmare reduplicating the experience more or less exactly, and of a conditioned or associative response to stimuli resembling or in some way recalling the original experience. (3) Such a condition can exist independently of motive or volition. (4) The dream usually dies out, but the conditioned response is apt to persist indefinitely, without any other symptoms. (5) The response when re-aroused may involve only visceral reactions, or it may disturb consciousness as well by producing difficulty in concentration, together with conscious fear. (6) The result may be a condition specifically disabling for certain tasks—e.g., flying an aeroplane. (7) This theory may explain the good performance of such individuals in other circumstances—e.g., in the Army—afterwards.

As accessory symptoms there may exist a loss of emotional control, resulting in a form of irritability, but probably more often in some degree more generalized. Thus one man described his whole attitude as "excitable" and "fussy."

Anxiety and Other Psychoneuroses after Trauma

In individuals whose ego-organization is not stable, who are either anxious or narcissistic, the response to a traumatic experience may include the above characteristics, but it is usually shown either in persistent anxiety symptoms or in hysterical ones. In fact, in some apparent contradiction to Freud's (1922) original notion, those who are "prepared" with anxiety for any threat to existence are more apt to develop a psychoneurosis afterwards.

The following is an example of psychoneurosis after psychological trauma in which symptoms of anxiety and apprehension predominate. In such instances the traumatic experience probably simply accentuates a pre-existing state of anxious anticipation:

Sgt. B., aged 34, an air gunner under training with 30 flying hours in his log-book, was involved in an aircraft crash. He does not remember the machine actually hitting the ground; the first thing he remembers was that the aircraft was on fire and that he was being pulled out. Then "something blew up" and he was for a brief period unconscious. The next thing he remembers is being in an ambulance. He said: "When I came to and found the aircraft was on fire I looked round for a hatchet and was very calm. I still couldn't get out, and was reconciled to being burned. I was not worried. Then when I heard someone trying to get in I began to want to get out. Then he ran away, and this worried me; but he came back. I remember screaming 'Come back,' but up till then I didn't seem to worry what happened—I was more or less contented."

His symptoms now consisted of a "confined feeling" in the head, insomnia, pain in the back of the head, nervousness in any closed space, whether a bus or a building, and difficulty in concentrating and in remembering. He was obsessively pre-occupied, not with the accident but with the idea of flying again. He felt relief in contemplating a newspaper photograph of a peaceful rural scene. "I look at the photograph and I feel more confident; it's peace and quiet." In temperament he was timid, anxious, a poor mixer, emotional, and meticulous in his habits.

The main points are: his timid and anxious temperament, his vivid recollection of the crash, the preliminary moments in which he felt no fear, followed by panic; and the subsequent persistent anxiety reactions coupled with a conditioned response to closed spaces.

Both types of reaction may occur in the same individual, as in the following instance, combining the pure traumatic effect of dream and conditioned responses plus anxiety symptoms arising out of an insecure and dependent personality in whom there is evidence presumptive of unresolved infantile conflict.

An officer, aged 36, complained of insomnia with nightmares and drenching sweats, inability to concentrate, dislike of meeting people, and a tendency to worry about everything. He had become worse since he had received notice of a posting away from his present unit, which is stationed near enough to his home to enable him to live out. His personal history was that he grew up with the feeling that he was not wanted by his mother. Her entire affection was bound up in his sister, who is now, as he says, a complete contrast to himself—"a care-free strapping girl." For the first six years of his life he was brought up by his grandmother. His father realized the mother's attitude and tried in some ways to atone for it, but, on the other hand, he was a severe disciplinarian who often beat the boy.

As a child he was nervous of being left alone. He was exposed to air raids in London during the last war and was extremely afraid of them. He walked in his sleep a great deal; on one occasion he lit a bonfire in the grounds of the house, and on another occasion he wandered down the road and was brought home by a policeman. His mother used to lock him in his room to stop this, and he experienced great terror when he woke up during his sleep-walking in his attempt to get out of his room.

At school, in his younger days, he was the butt of the others, as he was always dressed differently. He made friends readily enough and played the usual games, except for a period between 14 and 16, when he had to wear a truss. He was a good swimmer.

He has, to this day, disliked the limelight; he likes to work "behind the scenes," as he put it. In spite of this he had a successful business life, became a very hard worker and conscientious in an obsessional way, although he is not severely obsessional in his mental habits; he dislikes dirt extremely and has a distaste for untidiness. He has always been capable of self-discipline, even to a

punishing extent. For example, in his boyhood he would go to early morning service at church, without breakfast, and while kneeling in church in these circumstances he fainted several times. This ardent church attendance was connected with his admiration for a prominent preacher of the time, with whom he became close friends. When the war started he became an A.R.P. warden; he experienced a considerable number of air raids without being disturbed in his efficiency and in spite of loss of sleep.

He enjoyed his work in a non-flying branch of the R.A.F., remaining fit until Jan., 1943, when he had an attack of influenza, followed by jaundice. He still felt unwell on his return to his unit, which was raided on March 9, 1943. There was a "near miss" on the hut in which he was. He remembers no fear at the time; in fact, he remembers realizing that the bomb was going to land very close and reconciling himself to what he thought was the inevitable end. He was bruised by falling debris, and remembers that he had the very greatest difficulty in preventing himself from running instead of walking to an adjacent shelter, but he slept perfectly well that night. At breakfast in the morning, however, he felt disinclined for food, and in the afternoon of the day after the bomb fell, when a siren went again, he found himself, to his surprise, very much affected, feeling extremely afraid and experiencing great difficulty in controlling himself so as not to show signs of fear in front of his brother officers. Since then he has suffered from the symptoms of which he now complains. His nightmares are not usually about bombs, but about drowning or being strangled, and he wakes up in such a profuse sweat that his pyjamas are soaked.

After this condition developed he succeeded in getting a post to a station where he could live out, at home with his wife. Previously it had not been an ordeal to be away from her, but now he found himself very dependent on her support and comfort. There were no air raids in the vicinity of his unit, but an air-raid siren went off every Sunday morning as a practice. He observed that he inevitably reacted with feelings of tension and anxiety until he reminded himself that it was not a sign of an actual air raid, and his commotion subsided to the level which is now habitual, as he described it in his symptoms.

NOTABLE POINTS IN THE ABOVE CASE

1. The patient was a good example of a child suffering from rejection by his mother, with anxiety symptoms in his childhood which were probably closely related to this situation, and with a chronic sense of inferiority, also originating in all probability in the same way. His marriage to an older woman was probably determined a good deal by lack of the maternal type of affection in his boyhood, but it should be noted that his dependence was not so extreme that he was unable to live with reasonable happiness apart from her until after the air-raid experience of March, 1943. No doubt the anxiety reactivated by this traumatic experience could be construed as separation anxiety, revived.

2. There is no question of lack of courage, since he had endured many previous air raids with success and taken an active part in the work of defence.

3. His sense of duty has some of its roots in his obsessional characteristics, which may again be related in some degree to his upbringing by an unaffectionate mother and an affectionate but severe father. His excessive conscientiousness shows itself in his reaction to his present symptoms; he says: "I am thoroughly ashamed of this—I am yellow."

4. The air raid which upset him occurred at a time when his general health was impaired and therefore his resistance, both physical and mental, lowered.

5. During that episode he had no awareness of fear of the bombs approaching, although immediately afterwards he noticed that he had difficulty in controlling the impulse of flight. It is notable, also, that he slept quite well on the following night and that there was a latent interval between the experience and the development of symptoms. Furthermore, the symptoms appeared not to develop to any disturbing extent until another stimulus occurred—namely, an air-raid warning recalling the previous experience. It is virtually certain that this air-raid warning signified to his mind, at the time, another air raid, and that, unlike the practice warnings at his new unit afterwards, it had a definite meaning of danger for him. It is to be observed also that subsequent air-raid warnings, although rapidly recognized as innocuous, continued to produce exacerbations of his now chronic emotional tension. Moreover, his symptoms of chronic tension have persisted in spite of his being away altogether from reminders in the shape of actual raids or danger of any kind.

Additional Points on Cases

1. It is notable that most R.A.F. crew members who have been involved in a flying accident seem to remember the traumatic experience vividly and in detail. This is contrary to Kardiner's observation; but his cases were of much longer standing—years, instead of weeks or months, having elapsed since the event. It is probable that hysterical processes entered far more often into the psychodynamics of his group.

2. There is, in a considerable proportion of the cases coming under my observation, retrospective evidence that there was conscious fear at the time of the occurrence. "Delayed inhibition" in the Pavlovian sense does not seem to have been the process responsible in them for the subsequent psychoneurosis.

3. It is possible that some stupors are essentially states of extreme preoccupation with the frightening experiences (cf. Hoch's (1921) *Benign Stupors* and the preoccupation with death).

4. Other stupors are presumably hysterical (avoidance) methods of dealing with the same kind of experience.

5. The long persistence of conditioned responses after trauma, up to two years in some R.A.F. cases, and probably indefinitely longer, has its parallel (Anderson and Parmenter, 1941) in sheep with experimental neuroses.

6. Some phobias, not of war origin, have probably the same kind of basis, extended to other situations recalling the original traumatic one in some way.

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GAS GANGRENE

WITH SPECIAL REFERENCE TO VASCULARIZATION OF MUSCLES

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The various factors in the pathogenesis of gas gangrene have still to be assessed. Of these, muscle ischaemia, while generally recognized as playing a part, has not received the attention it deserves. The present paper attempts to elucidate some of the problems of surgical treatment, with particular reference to the possible effects of vascular injury in promoting gas gangrene in war wounds.

Out of a series of 6,000 wounded 20 cases of gas gangrene were encountered in this general hospital during the first two months of the fighting in Normandy. It is seldom that the surgeons of a large general hospital have had the opportunity provided in this beach-head of seeing their patients within six to eight hours of wounding, of undertaking the primary surgery, and of observing the sequence of events at first hand from day to day. Adequate notes are available in 16 of the 20 cases encountered, and in only one of these had the initial operation been undertaken at a forward C.C.S.

Three factors are essential for the establishment of gas gangrene—the presence of pathogenic clostridia, an adequate mass of ischaemic or necrotic muscle, and delayed or faulty surgery. The first two are unavoidable, and can be effectively countered only by early adequate surgery. When casualties are heavy it is impossible to operate on all cases within the optimum period, but if those likely to develop gas gangrene are given priority it would go a long way towards eradicating this disease. Apart from gross destruction of a limb, gas gangrene is most

lethal in the thigh and buttocks, and all cases of shell wounds in these areas should be given operative priority.

Muscles are supplied by one or more arteries. Should one of these be injured, then that part of the muscle supplied by the injured vessel becomes ischaemic. When this occurs the re-establishment of the collateral circulation within the muscle appears to be extremely slow, and in open wounds invariably results in necrosis. This not only is borne out by my own operative experience, but has recently been proved experimentally in rabbits by Le Gros Clark (1945). He states: "After ligation of the lower vessel of supply to the tibialis anticus . . . the normal vascularization of the lower half of the muscle is not restored for about a week. If both of the main vessels supplying the tibialis anticus are ligatured revascularization is delayed for a fortnight." And again: "In spite of anastomotic connexions, the interruption of one vessel of supply to a muscle (or one of its branches) may lead to a relatively extensive and well-defined area of ischaemia lasting for several days. This is important in relation to the infection of muscles in war wounds." I would go further and state that, combined with the presence of clostridia, it invariably results in gas gangrene.

I have stated that sufficient ischaemic or necrotic muscle is essential for the establishment of gas gangrene, and the following examples illustrate this. In the first, a small ragged piece of shell passes through the thigh, causing no arterial damage; it leaves in its wake a tract thinly lined with avascular muscle. Such cases, whether operated upon or not, will not develop gas gangrene: natural resources can cope with such damage. Now, if a similar piece of shell passing through the thigh should strike an artery—say the profunda femoris—we have a very different picture. Two groups of muscles are rendered ischaemic and form a suitable pabulum for micro-organisms. If clostridia are present in such a wound gas gangrene will be extensive and rapidly fatal; only early adequate surgery can be life-saving. On the other hand, should a smaller artery be lacerated—say one of the perforating branches of the profunda femoris—then a more limited area of muscle is rendered bloodless. In such a case gas gangrene, if it develops, will be less extensive and not so rapidly fatal. Such examples are often met with in war surgery, and they illustrate the paramount importance of the total exploration of all shell wounds, however small.

A surgeon who fails to remove significant quantities of ischaemic muscle is guilty of faulty surgery, for gas gangrene is very likely to develop. The thigh is more sinned against in this respect than any other part of the body, and failure to carry out adequate surgery in this region has been responsible for most of the recorded cases of gas gangrene in this war. Muscle deprived of its blood supply for six to eight hours dies. If operation has not been undertaken within this period all bloodless muscle must be excised. If one group of muscles is avascular it should be removed; if two groups are involved the limb should be amputated.

Of the 16 cases under review 14 occurred in the lower limb and 2 in the upper. The disparity is accounted for by the more abundant arterial anastomosis of the arm and by the relative vulnerability of the leg owing to its greater mass. It will be found that the cases come under two distinct categories—namely, massive gas gangrene resulting from damage to the main artery of a limb, and localized gas gangrene (in the early stages) resulting from laceration of muscular branches. Seven of each type occurred in the lower limb and one of each in the upper, as tabulated below. There were two deaths, both resulting from gas gangrene following injury to the popliteal artery.

	Main Arterial Damage	Injury to Muscular Branch
Upper limb	1	1
Lower limb	7 (two deaths)	7

Upper Limb

1. *Case of Main Arterial Damage*.—Cpl. A. was wounded in the abdomen and right elbow on June 29, 1944. He was in a forward position, and was not rescued till the morning of July 2—60 hours after being wounded. On admission to hospital the same day his condition was fair. He had an intestinal fistula and did not complain of abdominal discomfort. There was a foul-smelling wound on the anterior aspect of the elbow, the skin was mottled, and the arm above and below the elbow was greatly swollen. Rigor mortis